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THE INVENTION CLAIMED IS

1. A target comprising:

a film having a concavity.

2. A target comprising:

a first layer and a second layer.

3. The target of claim 2,

said first layer having a thickness in the range of approximately 50 to approximately 2000 nm; and

said second layer having a thickness in the range of approximately 10 to approximately 500 nm.

4. The target of claim 2,

said first layer having a substantially concave shape.

5. The target of claim 2,

said first layer having a concavity with a substantially pointed distal end.

6. The target of claim 2,

said first layer having a substantially cylindrical shaped concavity.

7. The target of claim 2,

said first layer having a substantially polygonal shaped concavity.

8. The target of claim 2,

said first layer having a concavity; and

said concavity having a base and a substantially curved shape at a distal end of the concavity.

9. The target of claim 2,

said first layer having a concavity; and

said concavity having a base and a substantially curved shape at the distal end of the concavity.

10. The target of claim 2,

wherein said first layer is a high Z metal.

11. The target of claim 10,

wherein said second layer is a lower Z material than said first layer.

12. The target of claim 2,

wherein said first layer is selected from the group consisting of aluminum, carbon, gold and lead.

13. The target of claim 2,

wherein said second layer is from the group consisting of plastic and water.

14. The target of claim 2,

wherein said first layer has a surface with at least one groove.

15. The target of claim 2,

wherein said first layer has a plurality of grooves.

16. The target of claim 15,

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wherein said at least one groove has a depth in the range of approximately 10 to approximately 100 nm.

17. The target of claim 2,

wherein said first layer has at least one groove having a width in the range of approximately 10 to approximately 100 nm.

18. The target of claim 2,

wherein said first layer is composed of a plurality of fibers.

19. The target of claim 2,

wherein said first layer is composed of a plurality of clusters.

20. The target of claim 19,

wherein each of said plurality of clusters are approximately 10 to approximately 100 nm in diameter.

21. The target of claim 2,

wherein said first layer is composed of a plurality of foams.

22. The target of claim 21,

wherein said plurality of foams are approximately 10 to approximately 100 nm in diameter.

23. The target of claim 2,

wherein hydrogen is adsorbed into the second layer on the side opposite of the first layer.

24. The target of claim 2,

wherein first layer is capable of absorbing greater than approximately 70% of the energy of an energy pulse.

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25. An accelerator system comprising:

a light source; and

a target having a thickness in the range of approximately 60 to approximately 2500 nm.

26. An accelerator system comprising:

a light source;

a target having a first layer with a thickness in the range of approximately 50 to approximately 2000 nm; and

said target having a second layer with a thickness in the range of approximately 10 to approximately 500 nm.

27. An accelerator system comprising:

a light source; and

a target having a substantially concave shape.

28. An accelerator system comprising:

a light source; and

a target having a shape selected from the group consisting of a plurality of concavities, a concavity with a substantially pointed distal end, a cylindrical shaped concavity, a polygonal shaped concavity, and a concavity with a base and a substantially curved shape at the distal end of the concavity.

29. An accelerator system comprising:

a light source; and

a target having a first layer formed from a high Z material and a second layer formed from a material having a lower Z than the high Z material.

30. The accelerator system of claim 29, wherein said high Z material are selected from the group consisting of aluminum, carbon, gold and lead.

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31. The accelerator system of claim 29, wherein said lower Z material in the second layer is selected from the group consisting of plastic and water.

32. An accelerator system comprising:

a light source; and

a target having at least one groove.

33. The accelerator system of claim 32,

wherein said at least one groove has a depth of less than approximately one micrometer.

34. The accelerator system of claim 32,

wherein said at least one groove has a depth in the range of approximately 10 to approximately 100 nm.

35. An accelerator system comprising:

a light source; and

a target having a surface selected from the group consisting of a plurality of grooves, a plurality of thin fibers, a plurality of foams and a plurality of clusters.

36. An accelerator system comprising:

a light source; and

a target having a plurality of clusters.

37. An accelerator system comprising:

a light source; and

a target having a plurality of foams.

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38. An accelerator system comprising:

a light source; and

a target having hydrogen adsorbed into the side opposite of the position of the light source.

39. An accelerator system comprising:

a light source capable of producing an energy pulse;

a target having a first layer and a second layer; and

wherein said first layer is capable of absorbing greater than approximately 70% of the energy of said energy pulse.

40. An accelerator comprising:

a laser system;

a target having a first layer and a second layer arranged to receive a laser pulse from said laser system; and

a beam transport system operatively coupled to said target and having an electronic guide.

41. The accelerator system of claim 40,

wherein said beam transport system is comprised of elements selected from the group consisting of slits, filters, magnets, foils and shields.

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42. The accelerator system of claim 40,

wherein the target is operatively connected to at least one roller.

43. An accelerator system comprising:

a light source capable of producing an energy pulse;

a target having a first layer and a second layer;

said first layer having a thickness in the range of approximately 50 to approximately 2000 nm;

said second layer having a thickness in the range of approximately 10 to approximately 500 nm; and

said first layer having a substantially concave shape.

44. A system comprising:

a light source capable of producing an energy pulse;

a target having a first layer and a second layer;

said first and second layers having a combined thickness in the range of approximately 60 to approximately 2500 nm;

said first layer having a substantially concave shape;

said first layer having a grooved surface;

wherein said first layer is a high Z metal material and said second layer is a lower Z metal material; and

wherein said first layer is capable of absorbing greater than approximately 70% the energy of said energy pulse.

45. A system comprising:

a light source capable of producing an energy pulse;

a target having a first layer and a second layer; and

wherein said first layer is capable of absorbing greater than approximately 70% of the energy of said energy pulse.

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46. A system comprising:

a light source capable of producing an energy per laser shot of between approximately 1 and approximately 10 Joules; and

a transport system capable of delivering energy in the range of approximately 10 to approximately 500 MeV.

47. A system comprising:

a light source capable of producing an energy per laser shot of between approximately 1 and approximately 10 Joules; and

a transport system capable of delivering energy in the range of approximately 100 to approximately 200 MeV.

48. An accelerator system comprising:

a light source capable of producing an energy per laser shot of between approximately 1 and 10 approximately Joules;

a target positioned to receive a laser shot from said light source; and

a transport system capable of delivering energy in the range of approximately 10 to approximately 500 MeV.

49. The accelerator system of claim 48,

wherein said target has a first layer and a second layer; and

said first and second layers having a combined thickness in the range of approximately 60 to approximately 2500 nm.

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50. The accelerator system of claim 48, wherein said target has a substantially concave shape.

51. A system comprising:

a light source capable of producing an energy per laser shot of between approximately 1 and approximately 10 Joules; and

a means for delivering energy in the range of approximately 10 to approximately 500 MeV to a treatment field.

52. A system comprising:

a light source capable of producing an energy pulse; and

a means for delivering energy in the range of approximately 10 to approximately 500 MeV to a treatment field.

53. A system comprising:

a light source capable of producing an energy pulse;

a means for absorbing greater than approximately 70% of the energy of said energy pulse and producing radiation elements; and

a means for discriminating said radiation elements to deliver energy in the range of approximately 10 to approximately 500 MeV to a treatment field.

54. A method comprising:

firing a pulse having an energy range of approximately 1 to approximately 10 Joules from a light source at a target;

guiding radiation elements emitted from said target;

discriminating ions having a predetermined energy range from said radiation elements; and

delivering said ions in an energy range of approximately 10 to approximately 500 MeV to a treatment field.

55. A method comprising:

firing a pulse having an energy range of approximately 1 to approximately 10 Joules from a light source at a target;

guiding radiation elements emitted from said target;

discriminating ions having a predetermined energy range from said radiation elements; and

delivering said ions in an energy range of approximately 100 to approximately 200 MeV to a treatment field.

56. A method of delivering a radiation dose to treat an oncological treatment field comprising:

firing a pulse having an energy range of approximately 1 to approximately 10 Joules from a light source at a target;

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guiding radiation elements emitted from said target;

discriminating ions having a predetermined energy range from said radiation elements; and

delivering said ions in an energy range of approximately 100 to approximately 200 MeV to said oncological treatment field.

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57. A method comprising:

firing a pulse from a light source at a target having a substantially concave shape;

guiding radiation elements emitted from said target;

discriminating ions having a predetermined energy range from said radiation elements; and

delivering said ions in an energy range of approximately 10 to approximately 500 MeV to a treatment field.

58. A method comprising:

firing a pulse from a light source at a target having a substantially concave shape;

guiding radiation elements emitted from said target;

discriminating ions having a predetermined energy range from said radiation elements; and

delivering said ions in the form of a beam having a spot size of approximately .5 to approximately 20 cm^2 on a treatment field.

59. A method comprising:

firing a pulse from a light source at a target having a roughened surface;

guiding radiation elements emitted from said target;

discriminating ions having a predetermined energy range from said radiation elements; and

delivering said ions in an energy range of approximately 10 to 500 MeV to a treatment field.

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60. A method comprising:

firing a pulse from a light source at a target having a first layer made from a high Z material and a second layer made from a lower Z material;

guiding radiation elements emitted from said laser pulse striking said target;

discriminating ions having a predetermined energy range from said radiation elements; and

delivering said ions in an energy range of approximately 10 to approximately 500 MeV to a treatment field.

61. A method comprising:

firing a pulse from a light source at a target having a shaped surface;

guiding radiation elements emitted from said target;

discriminating ions having a predetermined energy range from said radiation elements; and

delivering said ions which may penetrate about 10 to about 20 cm beneath the surface of skin tissue in a treatment field.

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62. A method comprising:

firing a pulse from a light source at a target having a shaped surface;

guiding radiation elements emitted from said target;

discriminating ions having a predetermined energy range from said radiation elements; and

delivering said ions to produce a dose per shot at a treatment field in the range of about .1 to about 10 Gy.

63. A method comprising:

firing a pulse from a light source at a target having a shaped surface;

guiding radiation elements emitted from said target;

discriminating ions having a predetermined energy range from said radiation elements; and

producing a dose per second at a treatment field of approximately .1 to approximately 100 Gy/second.

64. A method comprising:

adhering a first layer material to a second layer of material; and

forming said first and second layers into a substantially concave shape.

65. A method comprising:

adhering a first layer of high Z material to a second layer of lower Z material; and

forming said first and second layers into a substantially concave shape.

66. A system comprising:

a light source capable of producing an energy per laser shot of between approximately 1 and approximately 10 Joules;

a target capable of producing radiation elements; and

a transport system capable of delivering energy which may penetrate about 10 to about 20 cm beneath the surface of skin tissue in a treatment field.

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67. A system comprising:

a light source capable of producing an energy per shot of the light source of between approximately 1 and approximately 10 Joules;

a target capable of producing radiation elements; and

a transport system capable of delivering energy to produce a dose per shot at a treatment field in the range of about .1 to about 10 Gy.

68. A system comprising:

a light source capable of producing an energy per shot of the light source of between approximately 1 and approximately 10 Joules;

a target capable of producing radiation elements; and

a transport system capable of delivering energy producing a dose per second at a treatment field of approximately .1 to approximately 100 Gy/second.

69. A system comprising:

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a light source;

a fiber optic section operatively coupled to said light source; and

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a target having a concavity.

70. The system of claim 69, further comprising:

a housing surrounding said target.

71. The system of claim 69, further comprising:

a housing surrounding said fiber optic section.

72. The system of claim 69, further comprising:

a housing surrounding said target and said fiber optic section.

73. The system of claim 70, wherein said housing is a needle.

74. The system of claim 70, wherein said housing is a syringe.

75. The system of claim 70, wherein said housing has a diameter of approximately 50 to approximately 300 microns.

76. The system of claim 70, wherein said housing has a length of approximately 10 to approximately 40 cm.

77. The system of claim 69, wherein said fiber optic section has a thickness in the range of approximately 30 to approximately 500 microns.

78. The system of claim 69, wherein said target has first layer having a thickness in the range of about 50 to about 2000nm and a second layer having a thickness in the range of about 10 to about 500 nm.

79. The system of claim 69, wherein the target having a surface selected from the group consisting of a plurality of grooves, a plurality of thin fibers, a plurality of foams and a plurality of clusters.

80. The system of claim 69, wherein the target having a first layer formed from a high Z material and a second layer formed from a material having a lower Z than the high Z material.

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81. The system of claim 80, wherein said high Z material is selected from the group consisting of aluminum, carbon, gold and lead.

82. The system of claim 80, wherein said lower Z material in the second layer is selected from the group consisting of plastic and water.

83. The system of claim 69, wherein said target having a shape selected from the group consisting of a plurality of concavities, a concavity with a substantially pointed distal end, a cylindrical shaped concavity, a polygonal shaped concavity, a concavity with a base and a curved shape at the distal end of the concavity, and a concavity having a base and a curved shape at the distal end of the concavity.

84. The system of claim 69, wherein said fiber optic section is capable of being located within a range of approximately .1 to approximately 10 millimeters from a treatment field.

85. The system of claim 69, wherein said target may be from the group consisting of plastic, metal coated plastic, metallic foil coated with hydrogen gas/liquid spray, and a spongy material immersed in hydrogen.

86. A system comprising:

a light source;

a first fiber optic section operatively coupled to said light source;

a second fiber optic section operatively coupled to said first fiber optic section; and

a target having a concavity.

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87. A system comprising:

a means for emitting an energy pulse;

a means for guiding said energy pulse to a target; and

the target having a concavity.

88. A method comprising:

firing a pulse from a light source;

guiding said pulse through a fiber optic section to a target; and

delivering radiation elements emitted from said target to a treatment field.

89. A method of delivering a radiation dose to treat an oncological treatment field in a patient comprising:

firing a pulse from a laser;

guiding said pulse through a fiber optic section to a target; and

delivering radiation elements emitted from said target to the oncological treatment field in the patient.

90. The method of claim 89, further comprising:

positioning said fiber optic section beneath the skin surface of the patient.